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- (71) Applicant (*for all designated States except US*): UNIVERSITY OF CENTRAL FLORIDA [US/US]; Office of Technology Transfer, 4000 Central Florida Boulevard, Orlando, FL 32816-0150 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): DANIELL, Henry [US/US]; 1440 Pelican Bay Trail, Winter Park, FL 32792 (US).
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(54) Title: EXPRESSION OF PROTECTIVE ANTIGENS IN TRANSGENIC CHLOROPLASTS AND THE PRODUCTION OF IMPROVED VACCINES



(57) Abstract: Vaccines for conferring immunity in mammals to infective pathogens are provided, as well as vectors and methods for plastid transformation of plants to produce protective antigens and vaccines for oral delivery. The invention further provides transformed plastids having the ability to survive selection in both the light and the dark, at different developmental stages by using genes coding for two different enzymes capable of detoxifying the same selectable marker, driven by regulatory signals that are functional in proplastids as well as in mature chloroplasts. The invention utilizes antibiotic-free selectable markers to provide edible vaccines for conferring immunity to a mammal against *Bacillus anthracis*, as well as *Yersinia pestis*. The vaccines are operative by parenteral administration as well. The invention also extends to the transformed plants, plant parts, and seeds and progeny thereof. The invention is applicable to monocot and dicot plants.

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